(1) Claim amendments

WHAT IS CLAIMED IS:

Claim 1. (CURRENTLY AMENDED) An integrated optical mode shape transformer comprising:

(a) a composite waveguide having an input end and an output end, the input end supporting an input fundamental optical mode having a first spot size, the output end supporting an output fundamental optical mode having a second spot size,

(b) said first spot size being larger than said second spot size,

~~(a)~~ (c) said composite waveguide further comprising a first waveguide layer having a first refractive index value~~,~~ and a first thickness value, ~~and an input end,~~

~~(b)~~ (d) said composite waveguide further comprising a second waveguide layer having a second refractive index value and a second thickness value,

~~(c)~~ (e) said second layer having ~~an input end, an output end, and~~ a width that is laterally tapered down ~~between said input end and said output end~~ from input end of said composite waveguide to output end of said composite waveguide, and

~~(c)~~ (f) means for fabricating second waveguide layer ~~contiguously~~ on top of said first waveguide layer.

Claim 2. (CURRENTLY AMENDED) The transformer of claim 1 wherein said first refractive index value and said second refractive index value are ~~substantially~~ the same.

Claim 3. (CANCELED)

Claim 4. (CANCELED)

Claim 5. (CANCELED)

Claim 6. (CURRENTLY AMENDED) The transformer of claim 1 further comprising:

(a) providing an input fiber having a predetermined spot size, said input fiber positioned at input end of said composite waveguide,

(b) said first waveguide layer having a width at said input end matching that of said fiber spot size, and

(c) said second waveguide layer having a width at said input end matching that of said fiber spot size.

Claim 7. (ORIGINAL) The transformer of claim 6 wherein sum of said first thickness of said first waveguide layer and said second thickness of said second waveguide layer is substantially the same as said input fiber spot size.

Claim 8. (CURRENTLY AMENDED) A method of fabricating an integrated optical mode shape transformer comprising the steps of:

(a) means for depositing a first waveguide layer on a substrate, said first waveguide layer having a first refractive index value, a first thickness value, and an input end,

(b) means for fabricating a second waveguide layer ~~contiguously~~ on top of said first waveguide layer, said second layer having a second refractive index value, a second thickness value, an input end, and an output end,

(c) said second layer having a width that is laterally tapered down between said input end and said output end;

(d) said means for fabricating second waveguide consists of the steps of depositing a lower refractive index material over said first waveguide, means of

planarizing back said lower refractive index material so as to expose the top surface of said first waveguide layer,

(e) means for depositing said second waveguide layer on top of said first waveguide layer, and

(f) said means of planarizing consists of one or more of polishing, chemical mechanical polishing, or a multiple dep-and-etch process.

Claim 9. (ORIGINAL) The transformer of claim 8 wherein said first refractive index value and said second refractive index value are ~~substantially~~ the same.

Claim 10. (ORIGINAL) The transformer of claim 8 wherein said means of depositing includes one or more of chemical vapor deposition, sputtering, spin coating, epitaxial growth, ebeam deposition, or flame hydrolysis deposition.

Claim 11. (CANCLED)

Claim 12. (CANCELED)

Claim 13. (CANCELED)

Claim 14. (CANCLED)

Claim 15. (NEW) The transformer of claim 6 wherein said first spot size of said composite waveguide matches said spot size of input fiber.